CLAIMS

What is claimed is:

1. A polymerase inhibitor comprising a nucleic acid sequence at least a portion of which is double-stranded at or below the melting temperature of the nucleic acid sequence, wherein the double-stranded portion of the nucleic acid sequence is of sufficient length to be recognized by a polymerase as a template for extension except that the nucleic acid sequence is substantially incapable of being extended by the polymerase.

2. The polymerase inhibitor of claim 1 wherein the polymerase inhibitor is not specific for a nucleic acid polymerase or family of polymerases related to the nucleic acid polymerase.

3. The polymerase inhibitor of claim 1 wherein the inhibitory activity of the polymerase inhibitor is not sequence specific.

4. The polymerase inhibitor of claim 1 wherein the nucleic acid sequence of the polymerase inhibitor does not act as a primer for an intended target nucleic acid.

5. The polymerase inhibitor of claim 1 wherein the nucleic acid sequence of the polymerase inhibitor does not form part of the nucleic acid that includes an intended target nucleic acid sequence.

6. The polymerase inhibitor claim 1 wherein the polymerase inhibitor consists essentially of a nucleic acid sequence.

7. The polymerase inhibitor of claim 1 wherein at least the 5' terminal nucleic acid of the nucleic acid sequence is single stranded when the nucleic acid is at or below the melting temperature of the nucleic acid sequence.

8. The polymerase inhibitor of claim 1 wherein the 3' terminal nucleic acid of the nucleic acid sequence comprises a blocking moiety that prevents extension of the 3' terminal nucleic acid by the polymerase.

9. The polymerase inhibitor of claim 1 wherein at least one 3' terminal nucleic acid of the nucleic acid does not pair with at least one terminal 5' nucleic acid of the nucleic acid when the nucleic acid is double-stranded.

10. The polymerase inhibitor of claim 1 wherein the portion of the nucleic acid that is double-stranded at or below the melting temperature of the nucleic acid is formed by a single nucleic acid sequence that is capable of annealing to itself.

11. The polymerase inhibitor of claim 1 wherein the portion of the nucleic acid that is double-stranded at or below the melting temperature of the nucleic acid is formed by two separate nucleic acid sequences that at least partially anneal to one another.

12. The polymerase inhibitor of claim 1 wherein at least the 3' terminal nucleic acid of the nucleic acid sequence is single stranded when the nucleic acid is at or below the melting temperature of the nucleic acid sequence.

13. The polymerase inhibitor of claim 1 wherein the nucleic acid portion of the polymerase inhibitor comprises DNA or a DNA mimetic.

14. The polymerase inhibitor of claim 1 wherein the nucleic acid comprises RNA or an RNA mimetic.

15. The polymerase inhibitor of claim 1 wherein the nucleic acid portion of the polymerase inhibitor is resistant to exonuclease degradation.

16. The polymerase inhibitor of claim 1 wherein the melting temperature of the double stranded portion of the nucleic acid portion of the polymerase inhibitor is in the range of about 25 °C to 80 °C.

17. The polymerase inhibitor of claim 1 wherein the double stranded portion of the nucleic acid portion of the polymerase inhibitor is at least 10 bases in length.

18. A method for inhibiting a nucleic acid polymerase, comprising performing a nucleic acid amplification reaction in the presence of the polymerase inhibitor of any one of claims 1-17.

19. The method of claim 18 further comprising one or more additional polymerase inhibitors whose nucleic acid portions have different melting temperatures.

20. The method of claim 18 further comprising performing the nucleic acid amplification reaction on the reaction mixture, wherein the reaction mixture is capable of undergoing nucleic acid amplification when one or more target nucleic acids are present.

21. The method of claim 20 wherein the polymerase inhibitor is present at a ratio of 1 x 10E-12 mol decoy per unit of polymerase to 1 x 10E-10 mol decoy per unit of polymerase persists at a low concentration throughout the nucleic acid amplification reaction.

22. The method of claim 20 wherein the polymerase inhibitor is present in an amount that inhibits substantially all of the polymerase.

23. The method of claim 20 further comprising detecting the presence or absence of any nucleic acid produced by the nucleic acid amplification reaction.

24. The method of claim 23 further comprising quantifying the amount of any nucleic acid produce in the nucleic acid amplification reaction.

25. The method of claim 20 wherein the polymerase inhibitor is not displaced from the polymerase enzyme by a primed target nucleic acid.

26 A kit for inhibiting a nucleic acid polymerase comprising the polymerase inhibitor of any one of claims 1-17.

27. The kit of claim 26 further comprising one or more additional reagents for carrying out a nucleic acid amplification reaction.